REMARKS

1.   Apart from various formal amendments, has replaced the term "resorted" by the term "scrambled" throughout the rejected claims. This amendment is supported by page 27, line 13 of the specification. Furthermore, please refer to Fig. 3, item 180, Fig. 4, item 180, Fig. 5, item 380, Fig. 6, item 380, Fig. 7, item 380 and item 180.

As will be outlined later on, this amendment should fully clarify that US patent 6,300,888 is non-pertinent to the invention as defined in these claims.

Additional amendments in the claims can be seen from the enclosed listing of claims. Particularly, Applicant has replaced the "means" wording.

Furthermore, to address the Examiner's objections under section 4, Applicant has amended the objected claims.

2.   Before discussing the prior art in detail, Applicant will summarize the main features of the invention as defined in the rejected claims.

The embodiment of Claim 11 is illustrated in Fig. 7. The first data stream is encrypted by scrambling based on the first key. Item 30 in Fig. 7 corresponds to the partial decoder and the decryptor, and item 10' in Fig. 7 corresponds to the encryptor and partial encoder features.

The embodiment of Claim 12 is not a "transcryptor" as the device in Fig. 7 or Claim 11. Instead, Claim 12 generates an encrypted (second) data stream using a non-encrypted first data stream. Thus, Claim 12 corresponds to the right part of Fig. 7 which is indicated by "10'"

The embodiment of Claim 13 corresponds to the left part of Fig. 7, *i.e.* the device for generating an encoded data stream which has, in addition to item "30" in Fig. 7, the partial encoder feature which can also be seen in Fig. 9.

Finally, Claim 17 corresponds to the decryption device "30" in Fig. 7 without the partial encoder shown in Claim 13.

All of these claims have in common that a very smooth encryption has been performed or is removed. This smooth encryption is scrambling of quantized or non-quantized spectral values, which belong to the same code book. This soft encryption makes sure that no changes to the data stream syntax provided for by the encoder are performed

5   by the encryption. Therefore, as outlined in the paragraph bridging pages 16 and 17 of the specification, an inventively encrypted data stream can easily be read in by a decoder and subsequently decoded. Without knowledge about the ways of the encryption, *i.e.*, without knowledge about the key, the decoded audio signal then has a low quality, but is audible.

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Thus, as outlined in the second paragraph of page 17, a very easy encryption by scrambling based on a scrambling key and a very easy way of decryption by descrambling based on the key, and a very easy encryption/decryption concept is implemented, which does not interfere with the data stream syntax and, importantly,

15   does not increase the number of bits required by the bit stream. Instead, the inventively encrypted bit stream completely looks like a normal bit stream, but has a significantly reduced quality because (quantized) spectral values are scrambled. This results in a significant reduction of audio quality but does not fully destroy quality, because only spectral values belonging to the same code table are scrambled, which means that the

20   spectral values are only scrambled within certain frequency regions, but are not completely scrambled. Thus, the audible error introduced by the inventive encryption is limited. So, a user of a non-authorized decoder can, as outlined in the third paragraph of page 17, at least obtain a rough impression of the encrypted music what might bring him to buy an authorized version or to obtain the key. This allows the user to reverse

25   the influence on the data, *i.e.*, the scrambling of the spectral values that has been carried out in the apparatus for generating the encrypted data stream located in an apparatus for generating a decrypted data stream to obtain full audio and/or video quality.

30   3.   Applicant will now discuss U.S. patent No. 6,300,888 D1 (issued to Chen), (document D1).

Document D1 discloses a straight-forward audio encoder/decoder as illustrated in Fig. 2. At the output of quantizer 206, quantized spectral values are generated. At the

35   output of entropy encoder 208, entropy-encoded quantized spectral values, *i.e.*, some code words are generated.

On the decoder-side, the entropy decoder 212 in Fig. 2 of document D1 reads in the code words and generates quantized spectral values, which are, then, de-quantized in item 214 and subsequently time/frequency decoded and reconstructed.

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Particularly, as illustrated in Fig. 5, document D1 discloses a certain way of generating a code book, which is exemplarily illustrated in Figs. 6 to 12. Please refer to column 9, lines 49 and 50, where it is outlined that Fig. 5 is a flow chart showing a preferred method for generating an entropy encoder's code book for a certain input having a high
10 probability of non-zero frequency coefficients. Thus, the code book for a certain input stream is constructed as outlined for example by the example starting in column 11, lines 18 to 22.

Furthermore, as outlined in Fig. 4, and as stated in column 2, lines 57 to 67, the lower
15 frequency portion below section 306 in Fig. 3 is encoded using the variable length code (Huffman code) explained in Fig. 5, while the high frequency portion of the signal (above line 306 in Fig. 3) is encoded using a multi-level run-length code.

Importantly, please refer to the paragraph bridging pages 8 and 9, where it is outlined
20 that in contrast to MPEG 1, 2, and 4, where there are up to 24 code books, the document D1 invention only has two or three sub-ranges, *i.e.*, frequency ranges. Thus, the entropy encoding operation in document D1 generates, in accordance with the Fig. 5 embodiment, a certain code book for a certain sequence of input values. When this code book is ready, it is available for encoding data as outlined in column 12, line 60.
25 For encoding data, the input data are scanned to find out a variable-length input symbol having a certain number of paragraphs in the original sequence as shown in column 11, line 22 and to then find out the corresponding code word associated with this sequence of original symbols. This is meant by locate code book key 906 in Fig. 14. When the code book key is located, then the corresponding code word or code
30 book code is output as shown at 906 in Fig. 14. Thus, a sequence of code book codes is generated, which is the output of the entropy encoder 208. This sequence of code book codes is input into the entropy decoder which is outlined in column 14, lines 33 to 37. The encoded data, *i.e.*, the sequence of code book codes are looked up (906) in a decoding code book to find out the group of symbols corresponding to a single code
35 book code. Thus, the approximation of the original input frequency coefficients is generated, *i.e.*, the output of the entropy decoder 202 in Fig. 2 of document D1.

To summarize, document D1 discloses an audio encoder having an entropy encoder which adaptively builds its code book for the low frequency portion and encodes the input by looking up the input symbols in this code book and, then, performs an entropy-decoding step, in which, based on the same code book, the code book codes are decoded to obtain an original input.

Therefore, document D1 is completely silent on any <u>encryption</u> using a key or is completely silent about any <u>scrambling of frequency coefficients</u>, *i.e.*, changing the order of frequency coefficients. Changing the order of frequency coefficients would mean that the order of the input stream as is exemplarily outlined in column 11, line 22 would have been changed in document D1. However, it can easily be seen that nothing like that happens. Instead, document D1 tries to find grouping of input symbols to efficiently encode this. In exemplary term, this would mean the following:

Considering the following sequence

"AAABBAAC".

Document D1 tries to find out, whether it is better to group this sequence into "AAA", "BB" "AA", and "C" or, whether it is better to group this sequence into "AA", "AB", "BAAC", or in any other grouping of the symbols. However, the sequence of the single symbols is <u>never touched</u>.

In view of that, when looking to Claim 11, document D1 does not disclose any decryption or encryption.

Particularly, document D1 does not disclose a partial coder generating scrambled two or more spectral values (second paragraph of claim 11), because document D1 does not perform at all any scrambling of spectral values.

Although the entropy encoder 212 in Fig. 2 of document D1 could be seen as a "partial decoder", the entropy decoder 212 in Fig. 2 does not output scrambled spectral values, because scrambling is performed before entropy encoding on the encoder-side, *i.e.*, before item 208 in Fig. 2 of document D1.

Furthermore, document D1 does not disclose an encryptor for decrypting the scrambled two or more spectral values by reversing the scrambling based on the first key. Document D1 is completely silent on any decryption.

5   In the Office Action, the Examiner states that the "first key" would correspond to the "reverse code book" as outlined in column 5, lines 64 to 66. However, a reverse code book is used in the entropy decoder 212 to entropy-decode code book codes. However, the Examiner already said that the entropy decoder would correspond to the partial decoder of Claim 11. But, two features of Claim 11 cannot be represented by

10   one and the same feature in document D1.

Furthermore, an entropy decoder is different from a decryptor using a key. "Encryption" and "key" implies something secret, which is, of course, not the case in entropy encoding or entropy decoding, because the purpose of entropy encoding or decoding

15   is to reduce the number of bits necessary to be transmitted, but is not to restrict an access, which is the purpose of encryption.

Furthermore, entropy decoding allocates a certain output symbol to a certain code book code. No scrambling of spectral values is performed by entropy decoding,

20   because a scrambling of spectral values, *i.e.*, changing the sequence of spectral values does not have any influence on the entropy of the information.

Furthermore, document D1 does not disclose an encryptor for influencing the sequence of the two or more spectral values as defined in the penultimate paragraph

25   of Claim 11. Here, the Examiner refers to the encoding operation for entropy encoding. As outlined above, the code book key does not introduce any scrambling, but simply indicates which code book code corresponds to a certain input symbol. By means of the operation in 906 and 908 of Fig. 14, a code book code is generated based on a group of input values. However, the sequence of the input values which would

30   correspond to the two or more spectral values of the claim is not influenced by steps 906 and 908 of Fig. 14.

Thus, it becomes clear that document D1 does not disclose the decryptor feature and the encryptor feature of Claim 11.

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When one compares Fig. 7 of this application to Fig. 2 of document D1, one could say that the entropy decoder 224 in Fig. 7 corresponding to the partial decoder in Claim 11 might correspond to entropy decoder 212 in Fig. 2. The decryptor of Claim 11 would correspond to the inverse descrambling device 318 in Fig. 7, but has no counterpart in

5   document D1. The encryptor feature in Claim 11 would correspond to scrambling block 180 in Fig. 7, but does not have any counterpart in document D1.

Finally, the partial encoder of Claim 11 would correspond to entropy encoder 210 in Fig. 7, which would correspond to entropy encoder 208, when this entropy encoder is

10   connected downstream of entropy decoder 212 of Fig. 2.

Claim 12.

The Examiner maintains that the encryptor corresponds to the "entropy encoder 208" of document D1, Fig. 2, which has steps as shown in Fig. 14 of document D1.

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However, then document D1 does not disclose a partial decoder connected before the entropy encoder 208. All items 200, 202, 204, 206 in Fig. 2 are encoder-related features rather than decoder-related features.

20   Furthermore, as outlined above, the entropy encoder 208 does not perform any scrambling of quantized spectral values. Instead, the entropy encoder 208 allocates a certain code book code to a certain group of input values. The entropy encoder does not perform any scrambling of the input values. This would not make any sense.

25   Thus, document D1 does not show the encryptor feature.

Regarding Claim 13, the situation is similar.

Again, document D1 does not disclose a decryptor for decrypting the scrambed two or

30   more quantized spectral values by reversing the scrambling based on the key.

The reverse code book the Examiner refers to only performs an entropy decoding operation, as illustrated by entropy decoder 212 in Fig. 2, and, does not require any key. Furthermore, an entropy decoder allocates decoded output symbols to an input

35   code or a "code book code". However, the third paragraph of Claim 13 requires that the decryptor decrypts the scrambled two or more quantized spectral values by reversing

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the scrambling. However, no scrambling at all is performed by the entropy decoder. Thus, nothing can be reversed.

Regarding Claim 17, the same arguments as outlined above with respect to Claim 11 5 apply. Furthermore, document D1 does not disclose a decryptor for influencing the scrambled spectral values based on a key to reverse the uniquely reversible scrambling.

Again, the Examiner refers to the "reversed code book", i.e., to the straight-forward 10 entropy decoding operation performed in the entropy decoder 212. However, an entropy decoder does not scramble his input values, but allocates a certain symbol to an input code.

4. Applicant submits herewith replacement sheets for Figures 1 and 5. Applicant 15 notes that the Examiner mistakenly objected to Figure 4. There are no "decryption means...", element 38, on Figure 4.

5. Applicant has addressed the Examiner's rejections under 35 U.S.C. 112, as will be apparent upon reviewing the enclosed listing of claims.
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Should the Examiner deem it helpful, he is encouraged to contact Applicant's attorney, Michael A. Glenn, at (650) 474-8400.

Respectfully submitted,

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Michael A. Glenn
Reg. No. 30,176

30   Customer No. 22,862

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